BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 2 FEBRUARY 1954 PART 6

INSTITUTE NEWS

Spring Meeting, London, 26–30 April 1954

The 1954 Spring Meeting of the Institute will be held in London from Monday to Friday, 26–30 April, jointly with the Société Française de Métallurgie, with an extension from Saturday to Tuesday, 1–4 May, for members and ladies of the French society.

This is the first occasion on which the Institute of Metals (or, so far as is known, any British metallurgical society) has acted as host in the United Kingdom to a foreign metallurgical society, and the Council hopes that members will give this meeting their full support, especially by attending, with their friends, the Cocktail party and the Banquet and Dance given in honour of the French society. The Most Hon. the MARQUESS OF READING, C.B.E., M.C., T.D., Q.C. (Minister of State for Foreign Affairs), accompanied by Lady READING, has accepted an invitation to be the Institute's guest at the Banquet and to propose the toast of " The Institute of Metals and the Non-Ferrous Metal Industries ".

Members of the Iron and Steel Institute are being invited to attend the meeting on the same basis as members of the Institute of Metals and, as the Société Française de Métallurgie covers both ferrous and non-ferrous metallurgy, a session on ferrous metallurgy is being arranged in co-operation with the Iron and Steel Institute.

Members of the Institute of Metals have on two occasions been very warmly received, and generously entertained, at Autumn Meetings in Paris. The list of Patrons of the present meeting, which is printed below, indicates the support which British science and industry are giving to this offer of hospitality to the French society.

The programme arranged for the meeting should prove of interest to members engaged in widely differing fields of work, and it is hoped that there will be large attendances at the meetings and discussions.

Particular attention is directed to the fact that, excepting the May Lecture, all scientific sessions will be held at Church House, Great Smith Street, Westminster, S.W.1, (near Westminster Abbey). The meetings will be held in rooms in which the House of Lords and the House of Commons met during the war.

All members resident in Europe will receive, separately, a Reply Form for completion in connection with this meeting. Others, resident outside Europe, who intend to be present are asked to apply for a Reply Form.

It is requested that all members who intend to take any part in the meeting will notify the Secretary to that effect, so that they may be issued with meeting Badges bearing their names; the wearing of these badges by members will be helpful to our French guests and will facilitate introductions.

COMITÉ D'HONNEUR

The following have accepted invitations to be Patrons of the Joint Meeting (Members of a Comité d'Honneur):

ADRIAN, Dr. E. D., O.M., M.A., F.R.S. (President, The Royal Society).

AUSTIN, Professor G. Wesley, O.B.E., M.A., M.Sc. (Professor of Metallurgy, University of Cambridge).

BAILEY, Mr. G. L., C.B.E., M.Sc. (Director, British Non-Ferrous Metals Research Association, London).

BALL, Major C. J. P., D.S.O., M.C. (Chairman and Managing Director, Magnesium Elektron, Ltd., Manchester).

BARNARD, Mr. H. B. (Managing Director, H. B. Barnard and Sons, Ltd., London).

BOOTH, Mr. G. W. (President, The British Bronze and Brass Ingot Manufacturers' Association).

BRABY, Mr. F. C., M.C., B.Sc. (Chairman and Managing Director, Frederick Braby and Co., Ltd., London).

BROWN, Mr. A. J. S., B.Sc. (Managing Director, J. Stone and Co. (Deptford), Ltd., London).

BRUCE, Mr. Fraser W., B.A.Sc. (Managing Director, Northern Aluminium Co., Ltd., Banbury).

CAMPBELL, Mr. D. F., M.A., A.R.S.M. (Chairman, Electric Furnace Co., Ltd., Weybridge).

CLARKE, Mr. Horace W., Hon.D.Sc. (Chairman and Managing Director, James Booth and Co., Ltd., Birmingham).

COLQUHOUN, Mr. J. C., M.B.E. (Chairman and Managing Director, Manganese Bronze and Brass Co., Ltd., Birkenhead).

COOPER, Mr. L. H., M.B.E. (Chairman, The Mond Nickel Co., Ltd., London).

CUNLIFFE, The Hon. Geoffrey (Chairman, The British Non-Ferrous Smelters' Association).

DANNATT, Professor C. W., A.R.S.M., D.I.C. (Head of the Department of Metallurgy, Royal School of Mines, London).

FIENNES, Mr. M. A. (Managing Director, Davy and United Engineering Co., Ltd., Sheffield).

FLECK, Dr. Alex. (Chairman, Imperial Chemical Industries, Ltd., London).

GARRETT, Sir Ronald (Chairman, Lloyd's Register of Shipping, London).

GOVETT, Mr. J. R. (Chairman, The Consolidated Zinc Corporation, Ltd., London).

GRIMSTON, The Hon. John, M.P. (Managing Director, Enfield Rolling Mills, Ltd., Brimsdown).

Gueterbock, Colonel Sir Paul, K.C.B., D.S.O., M.C., T.D., A.D.C. (Managing Director, Capper Pass and Son, Ltd., Bristol).
Hamer, Mr. R. D., B.Sc. (President, The Aluminium Development Association, London).
Herrington, Mr. H. G. (Managing Director, High Duty Alloys, Ltd., Slough).
Humphreys, Mr. O. W., B.Sc. (Director, The General Electric Co., Ltd., and Director of the Company's Research Laboratories, Wembley).
Hunter, Mr. P. V., C.B.E. (Joint Deputy Chairman, British Insulated Callender's Cables, Ltd., Prescot).
Ireland, Mr. John, M.C., B.Sc. (Director, The Tin Research Institute, Greenford).
Jackson, Mr. H. E. (President, The British Non-Ferrous Metals Federation).
Jones, Sir Lewis, J.P. (Secretary, The South Wales Siemens Steel Association, Swansea).
Liddiard, Mr. E. A. G., M.A. (Director of Research, Fulmer Research Institute, Stoke Poges).
McConnell, Mr. J. L., M.C. (Chairman, Goodlass Wall and Lead Industries, Ltd., London).
McDonald, Mr. Donald, B.Sc. (Joint Managing Director, Johnson, Matthey and Co., Ltd., London).
McKechnie, Mr. J. D. (Chairman and Managing Director, McKechnie Brothers, Ltd., Birmingham).
Mitchell, Mr. James, C.B.E. (President, The Iron and Steel Institute).
Murphy, Professor A. J., M.Sc. (Head of the Department of Metallurgy, University of Birmingham).
Pfeil, Dr. L. B., O.B.E., A.R.S.M., F.R.S. (President, The Institution of Metallurgists).
Player, Mr. Edward (Managing Director, Birmid Industries, Ltd., Smethwick).
Portal of Hungerford, Marshal of the Royal Air Force The Right Hon. The Viscount, K.G., G.C.B., O.M., D.S.O., M.C. (Chairman, The British Aluminium Co., Ltd., London).
Preston, Mr. G. W., M.B.E. (General Manager, Copper Development Association, Radlett).
Randall, Mr. W. F., B.Sc., A.R.S.M. (Director, Metals Division, The Telegraph Construction and Maintenance Co., Ltd., London).
Robertson, Mr. W. H. A. (Managing Director, W. H. A. Robertson and Co., Ltd., Bedford).
Sanders, Mr. Spence (Managing Director, Almin, Ltd., Farnham Royal).
Seligman, Dr. Richard (Chairman, The A.P.V. Co., Ltd., London).
Slater, Mr. W. F., B.Sc. (Director and General Manager, Thomas Bolton and Sons, Ltd., Stoke-on-Trent).
Smout, Sir Arthur, J.P. (Chairman, Murex, Ltd., Rainham).
Stedeford, Mr. I. A. R. (Chairman and Managing Director, Tube Investments, Ltd., Birmingham).
Stubbs, Mr. R. Lewis, O.B.E. (Director, Zinc Development Association, Oxford).
Sturdee, Mr. A. H., M.B.E. (Chairman, Light Metal Founders' Association).
Trebucq, Mr. A. (Deputy Chairman, H. J. Enthoven and Sons, Ltd., London).

EXECUTIVE COMMITTEE FOR THE MEETING

Dorey, Dr. S. F., C.B.E., F.R.S. (Chief Engineer Surveyor, Lloyd's Register of Shipping, London) *Chairman.*
Baer, Mr. Alfred, B.A. (Vice-Chairman, The Consolidated Zinc Co., Ltd., London).
Bailey, Mr. G. L., C.B.E., M.Sc. (Director, The British Non-Ferrous Metals Research Association, London).
Braby, Mr. F. C., M.C., B.Sc. (Chairman and Managing Director, Frederick Braby and Co., Ltd., London).
Cook, Dr. Maurice (Joint Managing Director, Imperial Chemical Industries, Ltd., Metals Division, Birmingham).
Dannatt, Professor C. W., A.R.S.M. (Head of the Department of Metallurgy, Royal School of Mines, London).
Headlam-Morley, Mr. K. (Secretary, The Iron and Steel Institute, London).
Hunt, Dr. L. B. (Manager, Industrial Division, Johnson, Matthey and Co., Ltd., London).
Jones, Mr. E. H. (Director, Capper Pass and Son, Ltd., Bristol).
Parker, Dr. R. T., B.Sc., A.R.S.M. (Director of Research, Aluminium Laboratories, Ltd., Banbury).
Pfeil, Dr. L. B., O.B.E., A.R.S.M., F.R.S. (Director, The Mond Nickel Co., Ltd., London).
Thompson, Professor F. C., D.Met., M.Sc. (President of the Institute of Metals; Professor of Metallurgy, University of Manchester).

Secretary :

Guillan, Lieut.-Colonel S. C., T.D.

PROGRAMME

Monday, 26 April 1954

9.30 a.m. to 6.0 p.m. — Registration of members of the Société Française de Métallurgie, the Institute of Metals, and members of the Iron and Steel Institute; issue of tickets, literature, maps, &c., at the Secretary's office, Church House, Great Smith Street, London, S.W.1 (close to Westminster Abbey), in Committee Room 6 (First Floor).

2.0 to 5.30 p.m. — *Ladies and Members of the Société Française de Métallurgie :* Coach tour of London, by invitation of the Reception Committee.

or

2.0 p.m. — *Members of the Société Française de Métallurgie :* Visits, by invitation, to one of the following :

(i) The British Non-Ferrous Metals Research Association, Laboratories, Euston St., London, N.W.1. (Co-operative industrial research.)
(ii) The British Iron and Steel Research Association, Laboratories, London, S.W.11. (Chemistry and Physics Departments of the B.I.S.R.A. Laboratories.)
(iii) Britannia Lead Co., Ltd., Britannia Works, Northfleet, Kent. (Lead Refiners.)
(iv) The Mond Nickel Co., Ltd., Acton. (Precious metal refinery and laboratories.)

Location : Royal Institution, Albemarle St., London, W.1.

6.30 p.m. — *OPENING CEREMONY.* Welcome to members of the Société Française de Métallurgie, by the President on behalf of the Institute of Metals and by Professor Sir Cyril Hinshelwood, Foreign Secretary of The Royal Society, on behalf of British science.

7.0 p.m. *May Lecture*, by Professor L. F. BATES, D.Sc., F.R.S. (Lancashire-Spencer Professor of Physics, University of Nottingham), on magnetic characteristics of metals.

8.30 for 8.45 p.m. *Council Dinner in honour of the May Lecturer.*

Tuesday, 27 April 1954

Location : Church House, Great Smith Street, S.W.1 (Convocation Hall).

9.30 a.m. to 5.0 p.m. Registration of members of the Société Française de Métallurgie at the Secretary's office in Committee Room 6 (First Floor).

10.0 a.m. *Annual General Meeting* of the Institute of Metals :

Election of Officers.

Report of Council for the Year Ended 31 December 1953.

Report of the Honorary Treasurer for the Financial Year Ended 30 June 1953.

Presentation to the Institute of a Presidential Badge by the Directors of Johnson, Matthey and Co., Ltd.

Installation of the New President, Dr. S. F. DOREY, C.B.E., F.R.S.

Presentation of Institute Medals and Students' Essay Prizes.

Presidential Address, by Dr. S. F. DOREY, C.B.E., F.R.S.

12 noon *Cocktail Party* in the Hoare Memorial Hall, Church House, given for members and ladies of the Société Française de Métallurgie, by the Reception Committee, at which members of the Institute and of the Iron and Steel Institute will meet the members of the Société.

PROGRAMME "A"

2.15 p.m. *Visits for Members and Ladies of the Société Française de Métallurgie :*

(a) *Ladies (and Members)* of the Société, by invitation of the Reception Committee :

(i) The National Gallery, *or*
(ii) Harrods, Ltd.

(b) *Members of the Société :* Visits, by invitation, to one of the following :

(i) Frederick Braby and Co., Ltd., Crayford. (Galvanizing; manufacture of sheet, plate, and sectional products.)

(ii) Chemical Research Laboratory, Department of Scientific and Industrial Research, Teddington.

(iii) Fraser and Chalmers, Ltd., Erith. (Steam turbines, mining equipment, conveyor plants, fuel preparation plant, &c.)

(iv) National Physical Laboratory, Department of Scientific and Industrial Research, Teddington. (Divisions deal with Aerodynamics, Electricity, Light, Mathematics, Metallurgy, Metrology, Physics, and Ships.)

(v) Telegraph Construction and Maintenance Co., Ltd., and Submarine Cables, Ltd., Greenwich. (Land and under-sea telephone and telegraph cables.)

PROGRAMME "B"

Location : Church House, Great Smith Street, S.W.1 (Convocation Hall).

2.30 p.m. *Scientific Session.* Discussion of the following papers published in the *Journal.*

(1) "An Investigation of Thickening and Metal Entrapment in a Light Alloy Melting Flux", by A. H. Sully, H. K. Hardy, and T. J. Heal (Serial No. 1495; Oct. 1953).

(2) *Jointly :*

"The Effect of Iron, Manganese, and Chromium on the Properties, in Sheet Form, of Aluminium Alloys Containing 0·7% Magnesium and 1·0% Silicon", by R. Chadwick, N. B. Muir, and H. B. Grainger (Serial No. 1498; Oct. 1953), *and*

"Factors Influencing Brittleness in Aluminium–Magnesium–Silicon Alloys", by I. R. Harris and P. C. Varley (to be published in April, 1954).

6.0 to 7.30 p.m. *Reception by Her Majesty's Government* for members and ladies of the Société Française de Métallurgie and a limited number of invited members of the Institute of Metals. The Right Hon. DUNCAN SANDYS, M.P. (Minister of Supply) will receive the guests.

Wednesday, 28 April 1954

10.0 a.m. *Ladies (and Members) of the Société Française de Métallurgie :*

Visit to the Tower of London (including the Crown Jewels) and Westminster Abbey, by invitation of the Reception Committee.

Location : Church House, Great Smith Street, S.W.1 (Hoare Memorial Hall).

9.30 a.m. to 5.0 p.m. Registration of members of the Société Française de Métallurgie and issue of tickets, &c., at the Secretary's office in Committee Room 6 (First Floor).

SCIENTIFIC SESSION "A"

10.0 a.m. *Symposium on "The Control of Quality in the Production of Wrought Non-Ferrous Metals and Alloys". Part II.—"The Control of Quality in Working Operations"*, based on the following papers to be published in the March 1954 issue of the *Journal :*

Introduction by a Rapporteur : Professor A. J. MURPHY.

"Statistical Control in Metal-Working Operations", by M. Whyte.

"Problems of Control of Dimension, Shape, and Finish in the Rolling of Sheet and Strip, and the Drawing of Wire", by H. Ford and J. G. Wistreich.

10.0 a.m. "The Control of Quality in the Hot and Cold Rolling of Aluminium and Aluminium Alloys", by F. King and A. N. Turner.
"The Control of Properties and Structure in the Hot and Cold Rolling of Copper and Copper-Base Alloys", by W. W. Kee.
"Some Factors Affecting the Quality of Extrusions", by C. Smith and N. Swindells.

12.45 p.m. Session "A" adjourned.

SCIENTIFIC SESSION "B"

Location : Church House (Convocation Hall).

10.0 a.m. *Theme : Precipitation-Hardening.* A discussion based on the following papers published, or to be published before the meeting, in the *Journal*:

Introduction by a Rapporteur: Dr. A. H. SULLY.
"The Effect of Minor Additions on the Age-Hardening Properties of a High-Purity Lead–Antimony Alloy", by L. M. T. Hopkin and C. J. Thwaites (Serial No. 1440; Jan. 1953).
"Some Metallographic Observations on Aged Aluminium–Copper Alloys", by I. J. Polmear and H. K. Hardy (Serial No. 1458; April 1953).
"Ageing Curves at 110° C. on Binary and Ternary Aluminium–Copper Alloys", by H. K. Hardy (Serial No. 1518; Feb. 1954).
"Structural Ageing Characteristics of Binary Aluminium–Copper Alloys", by J. M. Silcock, T. J. Heal, and H. K. Hardy. (Serial No. 1519; Feb. 1954).
"Changes of Damping Capacity in Quench-Ageing Aluminium-Rich Alloys", by K. M. Entwistle (Serial No. 1520; Feb. 1954).

12.45 p.m. Conclusion of Session.

SCIENTIFIC SESSION "C"

Location : Church House (Bishop Partridge Hall).

10.0 a.m. to 12.30 p.m. A discussion on papers on ferrous metallurgy, to be arranged in co-operation with the Iron and Steel Institute.

2.0 p.m. *Visits for Members and Ladies of the Société Française de Métallurgie :*

(a) *Ladies (and Members) of the Société*, by invitation of the Reception Committee :
(i) Victoria and Albert Museum, South Kensington, *or*
(ii) The Wallace Collection, London. (Works of Art.)

(b) *Members of the Société :*
(i) The British Non-Ferrous Metals Research Association, Laboratories, Euston St., London, N.W.1. (Co-operative industrial research.)
(ii) The British Iron and Steel Research Association, Laboratories, London, S.W.11. (Chemistry and Physics Departments of B.I.S.R.A. Laboratories.)
(iii) The General Electric Co., Ltd., Research Laboratory, Wembley.
(iv) J. Stone and Co. (Charlton), Ltd., Woolwich Road, London, S.E.7. (Marine, motor, and aero engineers; non-ferrous castings.)

SCIENTIFIC SESSION "A"

Location : Church House (Hoare Memorial Hall).

2.30 p.m. *Symposium on "The Control of Quality in the Production of Wrought Non-Ferrous Metals and Alloys". Part II.—"The Control of Quality in Working Operations"*, continued.

4.30 p.m. Session concluded.

SCIENTIFIC SESSION "B"

Location : Church House (Bishop Partridge Hall).

2.30 p.m. *Theme : Creep.* A discussion, based on the following papers published, or to be published before the meeting, in the *Journal*:

Introduction by a Rapporteur: Dr. W. BETTERIDGE.
"Some Observations on Creep and Fracture from Investigations on Lead Cable-Sheath Alloys", by A. Latin (Serial No. 1474; July 1953).
"Structural Studies of the Creep of Lead", by R. C. Gifkins (Serial No. 1493; Sept. 1953).
"Some Creep Characteristics of a Group of Precipitation-Hardening Alloys Based on the Alpha-Copper–Aluminium Phase", by J. P. Dennison (Serial No. 1504: Nov. 1953).
"The Low-Stress Torsional Creep Properties of Pure Aluminium", by W. Betteridge (Serial No. 1507; Dec. 1953).
"The Effects of Some Constitutional Factors on the Creep and Fatigue Properties of Lead and Lead Alloys", by L. M. T. Hopkin and C. J. Thwaites (Serial No. 1512; Dec. 1953).
"Mechanism of Creep Deformation in High-Purity Aluminium at High Temperatures", by H. C. Chang and N. J. Grant (Serial No. 1517; Feb. 1954).

4.30 p.m. Session concluded.

Evening *Banquet and Dance* in the Great Room, Grosvenor House, Park Lane, London, W.1, at which members and ladies of the Société Française de Métallurgie will be the guests of the Institute. (Dress: Evening dress, or uniforms, with decorations). Tickets, price 35*s*., including coffee and light refreshments served later in the evening. Dancing until 1.0 a.m., to Sidney Lipton's band.

(Tables can be booked for parties of 6, 8, or 10.)

Thursday, 29 April 1954

9.30 a.m. *Ladies (and Members) of the Société :* All-day visit to Windsor Castle; St. George's Chapel, Windsor; Eton College; and Hampton Court Palace, by invitation of the Reception Committee.

Location : Church House, Great Smith Street, S.W.1.

9.30 a.m. to 12 noon The Secretary's office will be open in Committee Room 6 (First Floor).

SCIENTIFIC SESSION "A"

Location : Church House (Hoare Memorial Hall).

10.0 a.m. to 12.30 p.m. *Informal Discussion on "Recovery and Recrystallization"*, organized by the Metal Physics Committee. Opening Speaker: Dr. R. W. K. Honeycombe.

SCIENTIFIC SESSION "B"

Location : Church House (Convocation Hall).

10.0 a.m. (1) *Theme : Continuous Casting.* A discussion on the following papers to be published in the April 1954 issue of the *Journal*:

"Techniques for the Investigation of Thermal Conditions in Continuous Casting", by D. M. Lewis.

"The Use of Autoradiography for Finding the Solidification Boundary in Continuously Cast Aluminium", by J. L. Putman.

(2) *Theme : Molybdenum and Molybdenum Alloys and the Arc Melting of Metals.* A discussion based on the following papers to be published in the April 1954 issue of the *Journal*:

"The Arc Melting of Metals and Its Application to the Casting of Molybdenum", by G. L. Hopkins, J. E. Jones, A. R. Moss, and D. O. Pickman.

"Molybdenum and Molybdenum Alloys", by J. H. Rendall, S. T. M. Johnstone, and W. E. Carrington.

"The Pressure Welding of Molybdenum", by A. R. Moss.

12.30 p.m. Conclusion of Session.

2.30 p.m. *Visits for members of the Société Française de Métallurgie, Institute of Metals, and Iron and Steel Institute :*

(i) The A.P.V. Company, Ltd., and A.P.V. Paramount, Ltd., Crawley. (Press, machine, and fitting shops for manufacture of plate heat exchangers, &c., in stainless steel; stainless steel pipe fittings; aluminium, gun-metal, and stainless steel foundries.)

(ii) The British Aluminium Co., Ltd., Research Laboratories, Gerrards Cross.

(iii) The General Electric Co., Ltd., Research Laboratories, Wembley.

(iv) The Wallace Collection, London. (Works of Art.)

6.30 p.m. *Reception at the French Embassy*, for members of the Société Française de Métallurgie and a limited number of invited members of the Institute.

Friday, 30 April 1954

All-day visits for Members and Ladies of the Société Française de Métallurgie, the Institute of Metals, and the Iron and Steel Institute.

(i) Cambridge (Colleges, &c.). (Visit and lunch for members of the Société by invitation of the Reception Committee.)

(ii) Associated Electrical Industries, Ltd., Research Laboratory, Aldermaston. (Long-term fundamental work for the A.E.I. Group of Companies.) (Lunch by invitation of the Company.)

(iii) Enfield Rolling Mills, Ltd., and Enfield Cables, Ltd., Brimsdown. (Copper refinery; production of rods, bus-bars, tape, &c., copper and brass sheet; zinc sheet; and aluminium casting alloys.) (Lunch by invitation of the Company.)

(iv) Ford Motor Co., Ltd., Dagenham. (Blast furnace, sinter plant, coke ovens, foundry, rolling mill, machine shop, and engine, motor car, and tractor assembly.) (Lunch by invitation of the Company.)

(v) Fulmer Research Institute, Stoke Poges, and High Duty Alloys, Ltd., Slough. (Lunch by invitation of High Duty Alloys, Ltd.)

(vi) Northern Aluminium Co., Ltd., Banbury, and Aluminium Laboratories, Ltd., Banbury. (Fabrication of semi-finished aluminium products—sheet mill and extrusion presses; manufacture of paste. The Laboratories undertake research on the fabrication and use of aluminium and its alloys.) (Lunch by invitation of the Company.)

(vii) Stewarts and Lloyds, Ltd., Corby. (Ore preparation, blast furnaces and coke ovens; basic Bessemer, open-hearth, and electric steel making; tube making.) (Lunch by invitation of the Company.)

Saturday, 1 May 1954

Members and Ladies of the Société Française de Métallurgie, the Institute of Metals, and the Iron and Steel Institute.

(i) All-day tour to Canterbury (Cathedral, &c.), via Kent countryside,

or

(ii) Sightseeing in London under own arrangements.

Sunday, 2 May 1954

Free in London. Members and ladies of the Société Française de Métallurgie leave London, in the evening, for (*a*) Birmingham, or (*b*) Cambridge, or (*c*) Sheffield, or (*d*) South Wales.

Monday and Tuesday, 3 and 4 May 1954

Members of the Société Française de Métallurgie will pay visits, by invitation, to the following works and laboratories, transport for which will be provided by the Reception Committee :

(a) *Birmingham Area :*

(i) Accles and Pollock, Ltd., Oldbury.

(ii) Birmetals, Ltd., Quinton. (Wrought light alloy products.)

(iii) Birmingham Aluminium Casting (1903) Co., Ltd., Smethwick. (Sand, gravity die, and pressure die castings in aluminium, magnesium, and zinc.)

(iv) James Booth and Co., Ltd., Kitts Green. (Wrought aluminium alloy products; sheet, extrusions, and tubes.)

(v) Imperial Chemical Industries, Ltd., Metals Division, Kynoch Works, Witton. (Copper and copper alloy sheet, strip, and extruded products.)

(vi) Imperial Chemical Industries, Ltd., Metals Division, Research Laboratories, Witton.
(vii) McKechnie Brothers, Ltd., Rotton Park Street, Birmingham. (Extruded rod and sections in brass, manganese-bronze, aluminium-bronze, nickel silver, and copper; hot-pressings in brass and bronze; chill-cast bar and non-ferrous ingots.)
(viii) The Mond Nickel Co., Ltd., Development and Research Department Laboratories, Wiggin St., Birmingham.
(ix) The Sandwell Casting Co., West Bromwich. (Brass casting.)
(x) Henry Wiggin and Co., Ltd., Wiggin Street Works, Birmingham. (Pure nickel in wrought forms; Ni–Cr electrical resistance alloys; Nimonic, Monel, and other special nickel alloys.)

Ladies will visit, by invitation of the Reception Committee:

(i) Stratford-on-Avon.
(ii) Warwick Castle and Broadway.

(b) *Cambridge Area:*

(i) British Welding Research Association, Laboratories, Abington.
(ii) Cambridge Instrument Co., Ltd.
(iii) Cavendish Laboratory. (Visitors will see the following Sections: Nuclear Physics, Radio Astronomy, Ionospheric Physics, Crystallography, Medical Research Council Unit, Low Temperature Physics, and Electron Microscopy, and also the Museum.)
(iv) Engineering Department, Cambridge University. (The Department includes Structures, Heat Engines, Electrical, Radio and Electronics, Hydraulics and Aeronautics Laboratories.)
(v) Metallurgy Department, Cambridge University.
(vi) The Colleges.

Ladies will visit, by invitation of the Reception Committee:

(i) The Colleges.
(ii) Ely Cathedral.

(c) *Sheffield Area:*

(i) The Brightside Foundry and Engineering Co., Ltd., Sheffield. (Rolling-mill plant; cast-iron castings.)
(ii) The British Iron and Steel Research Association, Laboratories.
(iii) Davy and United Engineering Co., Ltd., Park Iron Works, and Darnall, Sheffield. (Rolling mills, forging presses, steelworks plant, &c.; heavy iron foundry.)
(iv) Edgar Allen and Co., Ltd., Sheffield. (Steel castings; special alloy steels, tools, &c.)
(v) English Steel Corporation, Ltd., Sheffield. (Special alloy steels and large alloy steel forgings.)
(vi) Thos. Firth and John Brown, Ltd., Sheffield. (Special alloy steels and large alloy steel forgings.)
(vii) Samuel Fox and Co., Ltd., Stocksbridge Works, Sheffield. (Acid and basic open-hearth steels and electric steels in ingots, blooms, billets, bars, rods, sheets, cold-rolled strip, wire, springs, and umbrella frames.)
(viii) Hadfields, Ltd., Sheffield. (Steel makers; castings, forgings, heat- and corrosion-resisting steels; rolls; manganese-steel, &c.)
(ix) Steel, Peech and Tozer, Ltd., Rotherham. (Acid and basic open-hearth steels in ingots, blooms, slabs, billets, bars, tyres, wheels, axles, springs, and forgings.)

Ladies will visit, by invitation of the Reception Committee:

(i) The Dukeries.
(ii) Chatsworth and Haddon Hall.

(d) *South Wales:*

(i) Aluminium Wire and Cable Co., Ltd., Port Tennant.
(ii) The British Iron and Steel Research Association, Research Laboratories, Sketty Hall.
(iii) Guest, Keen, and Nettlefolds (South Wales), Ltd., Cardiff. (Hot-rolled steel rounds and flats; cold-rolled coil; mild-steel wire.)
(iv) Imperial Chemical Industries, Ltd., Metals Division, Waunarlwydd. (Aluminium alloys.)
(v) The Mond Nickel Co., Ltd., Nickel Refinery, Clydach.
(vi) The National Smelting Co., Ltd., Llansamlet, Swansea. (Zinc smelter, horizontal process; production of zinc, sulphuric acid, and ammonium sulphate.)
(vii) Northern Aluminium Co., Ltd., Rolling Mills, Rogerstone. (Container sheet, corrugated sheet, foils stock; alloy bar and wire; extrusions and tubing.)
(viii) High Duty Alloys, Ltd., Rolling Division, Wern Works, Briton Ferry. (Light metals.)
(ix) The Steel Company of Wales, Ltd., Abbey Works, Margam.
(x) The Steel Company of Wales, Ltd., Tinplate Works, Trostre.

Ladies will visit, by invitation of the Reception Committee:

(i) Gower Peninsula.
(ii) The Wye Valley.

GENERAL INFORMATION

Exhibition of Books and Technical Literature: During the meeting there will be an exhibition of French and British books and other literature of interest to metallurgists.

Lunch: There is a licensed restaurant (lunch 6*s.* 6*d.*) and also a buffet (lunch 3*s.*) at Church House, at which members may obtain lunch. (Caterers: Ring and Brymer, Ltd.) It is advisable to book in advance.

Coffee is obtainable at the Buffet during the morning.

Tea is obtainable up to 5 p.m.

Transport for Visits: All transport for visits will leave from near the entrance to St. Ermin's Hotel (by Caxton Hall), Caxton St., Westminster, S.W.1.

Meeting Halls: It may be of interest to members to know that, during the war, Parliament met in Halls in which this meeting is to be held: House of Lords in Convocation Hall and House of Commons in the Hoare Memorial Hall.

Awards of Medals

The Council of the Institute has made the following awards of medals for 1954:

The Institute of Metals (Platinum) Medal to Dr. LESLIE AITCHISON, M.Sc., in recognition of his services to metallurgy in industry, in education, and in public service.

The Rosenhain Medal to Professor ALAN HOWARD COTTRELL, B.Sc., Ph.D. (Professor of Physical Metallurgy, University of Birmingham), in recognition of his outstanding contributions to knowledge in the field of physical metallurgy, with special reference to the deformation of metals.

Honorary Corresponding Member to the Council

DR. G. S. FARNHAM, Assistant Manager in charge of Development and Research, The International Nickel Company of Canada, Ltd., has been appointed an Honorary Corresponding Member to the Council for Canada.

Discussion on Anomalous Behaviour of Chromium

A meeting will take place, under the auspices of the Acoustics Group of the Physical Society, at 4 Grosvenor Gardens, London, S.W.1, on 18 February 1954, at 5.15 p.m., to discuss such unusual phenomena as the existence of zero Poisson's ratio at a certain temperature on certain dilute chromium alloys. The following speakers will introduce the subject:

Mr. H. PURSEY and Dr. R. W. POWELL:
Temperature anomalies in the elasticity, electrical and thermal conductivities, and expansion of dilute chromium alloys.

Dr. A. H. SULLY:
Ductile-brittle transformation in chromium.

Mr. J. H. RENDALL:
The preparation of dilute chromium alloy specimens for elasticity investigations.

Members of the Institute of Metals, with their friends, will be particularly welcome at this meeting.

Election of Members

The following 25 Ordinary Members, 1 Junior Member, and 22 Student Members were elected on 31 December 1953:

As Ordinary Members

BEAVER, Stanley, A.R.I.C., Research Chemist, Peter Spence and Sons, Ltd., Widnes, Lancs.

BERGLUND, Karl Torkel, Met.Eng., Chief of Metallurgical Research, The Sandvik Steel Works Co., Ltd., Sandviken, Sweden.

BOETTCHER, Alfred, Dr.rer.techn.habil., Leiter der Metallforschung der Deutsche Gold und Silber Scheideanstalt, Leipzigerstrasse 10, Hanau-am-Main, Germany.

CLOUGH, William Allan, Assistant Metallurgist, Northern Aluminium Co., Ltd., Rogerstone, Mon.

DAVIES, John, Works Manager and Director, Expert Tool Heat Treatments, Garth Road, Lower Morden, Surrey.

DOANE, Gilbert Harry, B.A., Director of Libraries, University of Wisconsin, Madison 6, Wis., U.S.A.

ENDICOTT, George, Mech.Eng., Manager, Morgoil Bearing Department, Morgan Construction Co., Worcester 5, Mass., U.S.A.

FREETH, William Earl, B.Sc., Ph.D., Research Assistant, Department of Metallurgy, University of Birmingham.

HAUSNER, Henry H., Dr.Ing., Manager of Atomic Energy Engineering, Atomic Energy Division, Sylvania Electric Products, Inc., P.O. Box 59, Bayside, N.Y., U.S.A.

HOLLISTER, Ralph George, Metallurgist, 240 Lowfield Street, Dartford, Kent.

HOW, Ivor Martin, B.Sc., Metallurgical Engineer, Research Laboratories, The General Electric Company, Ltd., North Wembley, Middx.

HOWIE, Robert Charles, B.Sc., Ph.D., Lecturer in Metallurgy and Fuels, Heriot-Watt College, Edinburgh 1.

JOHN, Emrys George, B.Sc., L.I.M., Lecturer in Metallurgy, Llanelly Technical College, Llanelly, Carmarthenshire.

KESSLER, Harold D., M.Sc., Supervisor of Non-Ferrous Metals, Armour Research Foundation, Illinois Institute of Technology, Technology Center, Chicago 16, Ill., U.S.A.

KOSTING, Peter Robert, B.S., M.Ch.E., Ph.D., Supervising Physical Metallurgist, Watertown Arsenal Laboratory, Watertown 72, Mass., U.S.A.

LEUNG, Michael Siu-Kin, Chemist and Metallurgist, The Laboratory, 602 Taiping Building, Hong Kong.

MCCAIN, Kenneth Boice, B.S., Assistant Technical Director, Wilbur B. Driver Co., 1875 McCarter Highway, Newark, N.J., U.S.A.

PATWARDHAN, Madhao Krishna, Ph.D., B.Sc., A.I.M., Assistant Professor of Metallurgy, Banaras Hindu University, Banaras, India.

REDDEN, Thomas Kennedy, B.S., Research Metallurgist, Titanium Metals Corp. of America, P.O. Box 2128, Henderson, Nev., U.S.A.

SHNITZLER, Meyer J., S.B., Director of Research, The Gillette Co., Boston 6, Mass., U.S.A.

SILVERSTEIN, Mitchell, S.B., Chief Metallurgist, Specialloy, Inc., 4025 South Keeler Avenue, Chicago 32, Ill., U.S.A.

SPENGLER, Heinz Friedrich, Dr.rer.nat., Dipl.Ing., Metallkundler, Doublefabrik G. Rau, Pforzheim, Germany.

THACKER, Douglas, B.Sc., A.I.M., Lecturer in Metallurgy, Nottingham and District Technical College, Shakespeare Street, Nottingham.

VICHIT, Lieut.-Commander Yanyong, Engineer Officer, Naval Dockyard, Royal Thai Navy, Thonburi, Thailand.

ZEEVENHOOVEN, Kees, General Manager, Zeevenhooven and Company, N.V., Voorhaven 85–87, Rotterdam, Netherlands.

As Junior Member

THOMAS, Kenneth Charles, B.Sc., Research Metallurgist, The Bristol Aeroplane Co., Ltd., Engine Division, Filton, Bristol.

As Student Members

BAKER, Robert George, Student, Department of Metallurgy, University of Cambridge.

BARNETTE, David J., B.Mech.E., Research Assistant, Research Building No. 1, University of New York, Bronx, N.Y., U.S.A.

BURRAS, Geoffrey Alderson, Student, Department of Metallurgy, University of Leeds.

CASTLE, Stanley Percival, Metallurgical Analyst, Crossley Brothers, Ltd., Pottery Lane, Manchester 11.

EYCOTT, Anthony John, Student, Royal School of Mines, London, S.W.7.

GARLICK, Alan, Student, Department of Metallurgy, University of Leeds.

HANCOCK, Peter, Student, Department of Metallurgy, University of Manchester.

HILL, David Richard Ferrebee, Student, Department of Metallurgy, University of Cambridge.

HUNTER, David Booth, Student, Metallurgy Department, King's College, University of Durham, Newcastle-upon-Tyne.

KIRKWOOD, David Harvie, Student, Department of Metallurgy, University of Cambridge.

MASON, Robert, Jr., Student, Department of Metallurgy, King's College, University of Durham, Newcastle-upon-Tyne.

MEAKIN, John David, Student of Metallurgy, University of Leeds.

MENDALL, Sidney, Student of Metallurgy. (mail): 47 Algernon St., Grimsby, Lincs.

MOORE, Alan, B.Sc., Research Student in Physical Metallurgy, University of Birmingham.

MORGAN, Gomer Wynne, Student, Department of Metallurgy, University College, Swansea.

PERRY, M., Student, Department of Metallurgy, University of Cambridge.

REGAN, Michael Colin, Student, Department of Metallurgy, King's College, University of Durham, Newcastle-upon-Tyne.

RETTER, Thomas Francis, Student, Department of Metallurgy, University of Cambridge.

ROBERTS, Peter, Metallurgist, David Brown-Jackson, Ltd., Hampson Street, Salford 5.

SALTER, George Robert, Student, Department of Metallurgy, University of Birmingham.

THOMAS, Evan John, Student, Department of Metallurgy, University College, Swansea.

WILLETT, Keith Palmer, Student, Department of Metallurgy, University of Cambridge.

PERSONAL NOTES

DR. W. L. BARTLETT has left University College, Cardiff, to take up an appointment with the British Columbia Research Council, Vancouver, B.C.

MR. G. T. BROWN has left the Quasi-Arc Co., Ltd., to take a post as Metallurgist to Linread, Ltd., Birmingham.

MR. SELWYN BROWN has resigned his position as Manager of Research and Development to John Dale, Ltd., to take up the appointment of Purchasing Manager to Carreras, Ltd.

DR. HORACE W. CLARKE has been appointed Chairman of James Booth and Co., Ltd.

MR. KEITH L. COBB has severed connection with H. J. Enthoven and Sons, Ltd., and its subsidiary and associated companies.

MR. P. W. A. CUNNIFFE has left the South Wales Aluminium Co., Ltd., to take up the post of Technical Assistant (Metallurgical) with the National Smelting Co., Ltd., Llansamlet, Swansea.

DR. C. R. CUPP has joined the Research Department of the International Nickel Company of Canada, Copper Cliff, Ont.

MR. A. F. DUNBAR has been elected a Fellow of the Royal Australian Chemical Institute.

MR. V. W. ELDRED, who was recently awarded the Ph.D. degree of Cambridge University, has taken up an appointment at the Nelson Research Laboratories of The English Electric Co., Ltd., Stafford.

MR. ST. J. DE H. ELSTUB, a Director of Imperial Chemical Industries, Ltd., Metals Division, received a C.B.E. in the New Year Honours List.

DR. A. N. GERRITSEN, Senior Physicist of the Metals Research Group at Leiden University is to spend 1954 as Visiting Professor in the Physics Department of Purdue University, Lafayette, Ind., U.S.A.

MR. H. J. G. GOYNS has been elected Vice-President of the Institution of Production Engineers (South African Branch).

DR. T. L. JOHNSTON is now at the Institute of Engineering Research, University of California, Berkeley, Calif.

MR. E. A. LANGHAM has left England for Australia, where his address will be c/o The British Aluminium Co., Ltd., G.P.O. Box 7022, Sydney, N.S.W.

MR. J. G. MCMASTER has left the Port Pirie Technical College (S. Australia), where he was Instructor in charge of metallurgical work, and has gone to Canada.

MR. J. Y. MANN has been awarded the B.Sc. degree of Melbourne University.

MR. W. J. MILLER, who was Managing Director of Efco Engineering Co., Ltd., and Joint Managing Director of Electric Resistance Furnace Co., Ltd., retired on 1 January 1954, having reached retiring age. He had been with the Efco group of Companies since 1919.

MR. M. K. PATWARDHAN has been awarded the Ph.D. degree of Leeds University and has now returned to India.

DR. S. F. REITER has left the General Electric Research Laboratory, Schenectady, and is now with the Rome Fastener Corp., New Haven, Conn.

MR. J. SAVAS has left the Packard Motor Car Co. and is now Metallurgist to Alloy Research Co., East Detroit, Mich., U.S.A.

MR. G. J. SHAW has been awarded the degree of Ph.D. of Birmingham University for his work on the structures of cast iron produced by the continuous-casting process, and has now taken up the position of Metallurgist to the Coneygre Foundry, Ltd., Tipton, Staffs.

MR. P. H. STERLING has taken up a post-doctorate fellowship at the National Research Council, Pure Chemistry Division, Ottawa, Canada.

MR. Z. STOKOWIEC has left David Brown Foundries Company to become Bronze Foundry Manager to Sheepbridge Equipment, Ltd., Chesterfield.

MR. P. SUNDBACK is now with the Mallory-Sharon Titanium Corp., Niles, Ohio.

MR. R. I. TAYLOR has left Suffolk Iron Foundry, Ltd., to take up an appointment with Guest Keen and Nettlefolds (Cwmbran), Ltd., as Chief Metallurgist.

DR. W. A. WOOD, of the University of Melbourne, expects to reach England early in February for a visit lasting several months.

DR. F. WORMWELL has been awarded the degree of D.Sc. of London University.

PROFESSOR H. K. WORNER has been elected President of the Melbourne Branch of the Australian Institute of Metals. He is also Vice-President and Chairman of the Executive of the Federal Council of the Australian Institute.

Deaths

The Editor regrets to announce the deaths of:

Mr. C. F. Aston, of Heaton and Dugard, Ltd., Birmingham, on 13 October 1953.

Capt. A. C. Jessup, M.C., Chief Metallurgist, Magnesium Elektron, Ltd., on 8 December 1953.

Dr.-Ing. Bernhard Veltman of Metall- Guss- und Presswerk Heinrich Diehl, G.m.b.H., Nuremberg, on 2 December 1953.

OBITUARY

Captain A. C. Jessup, M.C.

It is with deep regret that we announce the death in Rome on 8 December 1953 of Captain A. C. Jessup, Chief Metallurgist to Magnesium Elektron, Ltd., at the age of sixty-two.

Alfred Claude Jessup was born in Switzerland, the elder son of A. E. Jessup, of Philadelphia, and Lady Mildred Jessup (née Bowes-Lyon). He was educated at Harrow and Liverpool University, where he studied Chemistry under Professor Baly.

At the outbreak of the First World War, although only in his early twenties, his scientific work was considered so brilliant that he was placed on a short list of scientists to be consulted by the Government. But, characteristically, that was not enough for him, and renouncing his American citizenship, he obtained a commission in the Royal Engineers, where he served with distinction. After being dangerously wounded, he was awarded the Military Cross for gallantry in the field. In 1917 he was appointed chemical consultant to the Fifth Army, and did valuable work on gas warfare.

He married Mlle. Madeleine Montet, in France, before the end of the war, and her death eight years later was a great blow to him. There were no children of the marriage.

On demobilization in 1919, Captain Jessup joined Mr. E. A. Ashcroft and assisted in the erection of a plant at Wolverhampton to work Ashcroft's second process for producing magnesium metal. This process was also adopted by the Société d'Électrochimie, d'Électrométallurgie et des Aciéries Électriques d'Ugine at Jarrie, near Grenoble, where Captain Jessup was sent to erect plant and supervise operations. Meanwhile he had himself devised an improved process for electrolytic magnesium production, and a new company (Société de Fabrication du Magnésium) was formed to work the process at Martigny. The company was later taken over by the Société des Produits Chimiques des Terres Rares, with whom Captain Jessup stayed until he left France in 1940. In 1936 he reorganized the magnesium plant at Bozel in Savoy, and later set up and worked another plant in Sardinia in the face of great difficulties.

Captain Jessup joined Magnesium Elektron, Ltd., in 1940 and after carrying out research work on electrolysis, succeeded Dr. F. A. Fox as Chief Metallurgist in 1947, a position he held with great distinction until his death. He directed with great ability and foresight the research team which first brought to commercial development the valuable alloys of magnesium with zirconium, zinc, and the rare-earth metals, and lately the important new alloys of magnesium, zirconium, zinc, and thorium. He was an avid reader of the technical literature and was probably the best-informed metallurgist on magnesium. He leaves behind him a band of young and able workers who, inspired by the enthusiasm he created, will continue his work in his traditions in the years ahead.

Captain Jessup had a wide knowledge of literature, and was the author of some remarkable poems, which, owing to the press of his scientific work, have yet to be published. His knowledge of music was profound, and his taste and enthusiasm were a source of delight to a number of the leading musicians of his time with whom he came in contact.

He was a notable mountaineer and climbed in Skye and on the Swiss Alps. He was interested in Rugby football, and intensely so in cricket, having a vast knowledge of every aspect of the game. His memory was phenomenal, extending even to individual scores in Test Matches played years ago.

At heart a philosopher, he latterly devoted great effort to the study of nuclear physics and cosmology, and made predictions in these fields subsequently verified by experiment.

His mental and physical energies were as unbounded as they were self-unsparing. His keen sense of comedy, tempered with an ironical wit, was an unfailing joy to his friends.

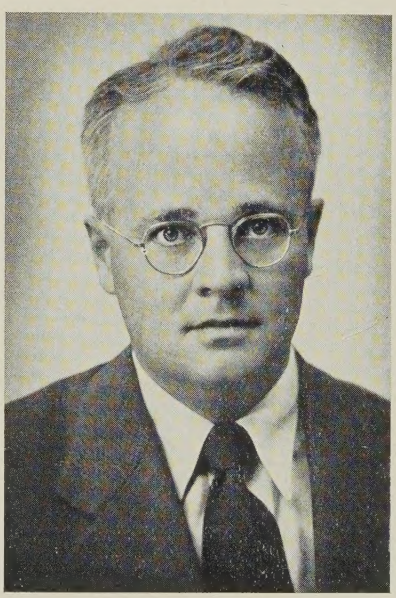
He was a man of high principles, and his generosity was an inspiration to all who were fortunate enough to claim his friendship. His passing deprives the Magnesium Industry of one of its most distinguished workers, and he will be greatly missed.

C. J. P. Ball

PERSONALITIES

Dr. G. S. Farnham

Gordon Stuart Farnham, who, as announced on p. 77, has been appointed an Honorary Corresponding Member to the Council for Canada, is a graduate of Queen's University



(B.A. 1929, B.Sc. 1931, M.Sc. 1932) and of Manchester University, where he was awarded a Ph.D. degree in 1934. He then went to Canada, and for the next two years he was a research metallurgist on the staff of the Ontario Research Foundation.

In 1936 Dr. Farnham joined the staff of the Bureau of Mines, eventually becoming Chief of the Physical Metallurgy Division. During the war years he also worked part-time for the British Commonwealth Scientific Office in Washington. He left Government service in 1946 to join the International

Nickel Company of Canada, Ltd., where he is now Assistant Manager in charge of Development and Research.

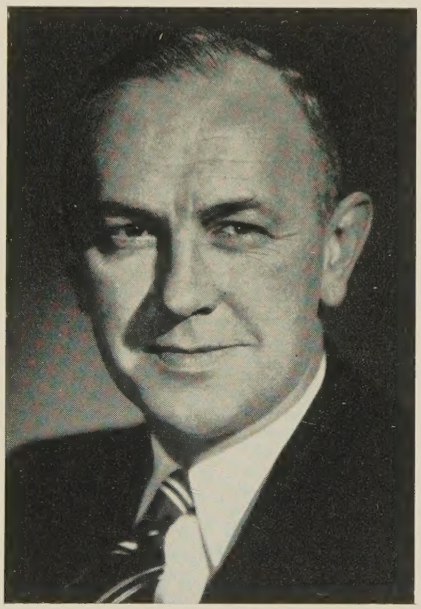
Dr. Farnham is a member of several British, Canadian, and United States scientific societies. He has been a member of the Institute of Metals since 1933.

Professor F. A. Forward

Frank Arthur Forward, who has recently been appointed an Honorary Corresponding Member to the Council for Canada, was born in 1902 at Ottawa, where he was educated at the Model School and Collegiate Institute. He then went to the University of Toronto, graduating B.A.Sc., with honours in Chemical Engineering, in 1924.

During the next five years Mr. Forward held various positions with the Consolidated Mining and Smelting Company of Trail, B.C. In 1929 he went to Australia, where he spent another five years with Mount Isa Mines, Ltd., Mt. Isa, Queensland. Since 1935 he has been on the staff of the Department of Mining and Metallurgy at the University of British Columbia, Vancouver, first as Assistant Professor, then as Associate Professor, and, since 1945, as Professor and Head of the Department. From 1941 to 1945 he served also as Technical Director of the British Columbia War Metals Research Board.

While at the University, Professor Forward has undertaken a number of consulting assignments, both in Canada and overseas. One of the most important of these, on which he has been engaged in the last few years, is the development of an ammonia-leaching process for the treatment of nickel ores. This process formed the subject of an interesting lecture



which Professor Forward gave to the London Local Section of the Institute last November and which it is hoped to publish shortly.

Dr. O. H. C. Messner

Otto Hans Caspar Messner, who has been appointed an Honorary Corresponding Member to the Council for Switzerland, was born at Zürich in 1917 and spent his childhood at Thun, where his father, Col. Messner, held the position of Managing Director of the Schweiz. Metallwerke Selve & Co.

On leaving Glarisegg College, he took up the study of non-ferrous metallurgy at the Technische Hochschule, Aachen. At the same time he also gained practical experience in various metallurgical companies, including 8 months'

work in England with Imperial Chemical Industries, Ltd., Metals Division, and Henry Wiggin and Co., Ltd. In 1946 he obtained his doctor degree at the Federal Institute of Technology (Zürich) for a thesis on creep phenomena in zinc and zinc alloys.

He joined the staff on the Metallwerke A.G., Dornach, in 1940 as works metallurgist and was engaged mainly on wartime development work on zinc alloys, the use of steel for cartridge-case manufacture, and researches in the aluminium field. (During that time he also carried out the experimental work which was to serve as a basis for his thesis.)

In 1946 he spent 6 months in the U.S.A. studying industrial developments during the war years, and on his return took up consulting work in addition to research work in the field of non-ferrous metal forming. Dr. Messner was appointed a lecturer at the Eidg. Technische Hochschule, Zürich, in 1951.

Besides editing two Swiss non-ferrous metal journals, *Pro-Metal* and *Aluminium Suisse*, he is Chairman of Controlco A.G. and on the board of the Metallwerke A.G., Dornach, and other Swiss companies. He has been a member of the Institute since 1936.

NEWS OF LOCAL SECTIONS AND ASSOCIATED SOCIETIES

Birmingham Local Section

The Birmingham Local Section has arranged to hold, on Friday, 26 February 1954, a Symposium entitled: "Some Techniques of Constitutional Metallurgy".

An Introductory Address will be given by Professor G. V. Raynor, and other short papers have been promised by: Mr. W. D. Biggs, Mr. S. G. Glover, Mr. F. G. Haynes, Mr. G. Mayer, Dr. J. W. Menter, and Mr. E. C. Williams.

The meeting will be held at the College of Technology, Suffolk St., Birmingham, and will begin at 10.0 a.m. There will be an open discussion during the afternoon session, when short supplementary contributions will be welcomed.

Synopses of the papers will be sent to all who register for the meeting (registration fee 7*s*., lunch 10*s*. 6*d*.). Communications and enquiries should be addressed to the Hon. Secretary, Mr. A. W. Matthews, 124 Hay Green Lane, Bournville, Birmingham 30.

JOINT ACTIVITIES

Mond Nickel Fellowships 1953

The Mond Nickel Fellowships Committee announces the following awards for 1953 :

J. E. Benson (Metropolitan-Vickers Electrical Co., Ltd., Manchester) to study the technique and interpretation of results of non-destructive testing of metal components in the United Kingdom, on the Continent, and in the U.S.A. and Canada.

K. Blackburn (Dorman, Long and Co., Ltd., Redcar) to study hot-metal basic open-hearth practice in Great Britain, on the Continent, and in the U.S.A. and Canada, with particular reference to mixer furnace operation, refractories, instrumentation, and pitside practice.

N. B. Pratt (Broken Hill Proprietary Co., Ltd., Newcastle, N.S.W.) to study the technical and economic aspects of recent advances in the erection and operation of integrated iron and steelworks in Great Britain, on the Continent, and in the U.S.A. and Canada.

OTHER NEWS

Conference on " Mechanical Effects of Dislocations in Crystals "

The Department of Metallurgy of the University of Birmingham is organizing a conference on " Mechanical Effects of Dislocations in Crystals " to be held in Birmingham on 19 and 20 July 1954. It will thus be complementary to the Bristol Conference to be held between 13 and 16 July, which will consider chemical aspects of dislocations in crystals. Although other topics will not be excluded, it is expected that discussion will be centred on effects due to moving dislocations in both metals and non-metals. Particular attention will be given to the nucleation and dynamics of slip in metals.

The dates of this conference have been arranged to fit in with other international conferences, and it is hoped to attract a wide attendance. It is expected that a number of scientists from overseas will personally present papers.

The conference is open to any scientist interested in this field, subject to limitation of seating accommodation. A University hall of residence has been booked for approximately 100 visitors, and hotels are also available. Further particulars are available from: The Secretary, 1954 Conference, Metallurgy Department, University of Birmingham, Edgbaston, Birmingham 15.

Conference on " The Physics of Particle-Size Analysis "

The Institute of Physics is holding a Conference on " The Physics of Particle-Size Analysis " in Nottingham from 6 to 9 April 1954. The following sessions have been arranged : the motion of particles in fluids; the scattering of light by particles; the general phenomena encountered in particle-size analysis; the comparison of methods of particle counting and sizing.

Preprints of the papers to be presented to the Conference will be available beforehand and, together with a summary of the discussion, will, in due course, be issued as a supplement to the *British Journal of Applied Physics*. Further particulars may be obtained from the Secretary, The Institute of Physics, 47 Belgrave Square, London, S.W.1.

DIARY

Local Sections and Associated Societies

17 February. Manchester Metallurgical Society. " New Optical Techniques ", by Dr. G. K. T. Conn. (Lecture Room, The Central Library, Manchester, at 6.30 p.m.)

26 February. Birmingham Local Section. All-day Symposium: " Some Techniques of Constitutional Metallurgy ". (For details see p. 80). (Birmingham College of Technology, Suffolk Street, Birmingham, at 10.0 a.m.)

2 March. Oxford Local Section. " Thermochemistry of Alloys ", by Dr. A. R. Harding. Official Visit of the President of the Institute. (Oak Room, Cadena Café, Cornmarket Street, Oxford, at 7.0 p.m.)

2 March. South Wales Local Section. " Aluminothermic Methods ", by T. Burchell. (University College, Metallurgy Department, Singleton Park, Swansea, at 6.45 p.m.)

3 March. Manchester Metallurgical Society. " Surface Finishing by Liquid Honing ", by D. V. Grant. (Lecture Room, The Central Library, Manchester, at 6.30 p.m.)

4 March. Birmingham Local Section. " Metals in the Oil Industries ". Arranged by Shell-Mex and B.P. Ltd. (James Watt Memorial Institute, Great Charles Street, Birmingham, at 6.30 p.m.)

4 March. Leeds Metallurgical Society. " Application of Aluminium and Its Alloys ", by J. C. Bailey. (Chemistry Department, The University, Leeds 2, at 7.15 p.m.)

4 March. London Local Section. " High-Temperature Corrosion ", by Dr. J. P. Dennison. (4 Grosvenor Gardens, London, S.W.1, at 6.30 p.m.)

8 March. Scottish Local Section. " Powder Metallurgy ", by Dr. D. D. Howat. (Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)

11 March. Liverpool Metallurgical Society. " Titanium—A Metal of Engineering Importance ", by Major P. L. Teed. Courtesy Visit of the President of the Institute of Metals. (Liverpool Engineering Society, The Temple, Dale Street, Liverpool, at 7.0 p.m.)

Other Societies

15 February. Institute of Metal Finishing, London Branch. Discussion: " Technical Education: How It Can Help You ", introduced by Dr. J. E. Garside, H. A. Manning, and Dr. L. L. Shreir. (Northampton Polytechnic, St. John Street, London, E.C.1, at 6.0 p.m.)

15 February. Institution of Production Engineers, Stoke-on-Trent Section. "Hot Press Forging", by H. E. Hows. Supported by a colour film. (Hanley Town Hall, Stoke-on-Trent, at 7.30 p.m.)

15 February. Royal Institute of Chemistry, Leeds Section. "Corrosion Theory in Practice", by Dr. T. P. Hoar. (Chemistry Lecture Theatre, The University, Leeds 2, at 6.30 p.m.)

16 February. Institute of British Foundrymen, East Anglian Section. "Outlook and Attitude of Management and Workers of British and American Foundries", by R. F. Horton. (Central Hall, Public Library, Ipswich, at 7.30 p.m.)

16 February. Institute of British Foundrymen, Slough Section. "Runners and Risers", by J. Wood. (Lecture Theatre, High Duty Alloys, Ltd., Slough, at 7.30 p.m.)

16 February. Institution of Production Engineers, Halifax Section. "Foundry Mechanization and Improved Methods of Production", by G. W. Nicholls. (White Swan Hotel, Halifax, at 7.15 p.m.)

16 February. Institution of Production Engineers, Oxford Section. "Cold Forming of Light Alloys", by D. A. Barlow. (The Town Hall, Oxford, at 7.15 p.m.)

16 February. Sheffield Metallurgical Association. "Analytical Chemistry of Boron", by H. G. Short. (B.I.S.R.A., Hoyle Street, Sheffield, at 7.0 p.m.)

17 February. Society of Instrument Technology, South Yorkshire Section. "*p*H and Electrical-Conductivity Measurement in Industry", by A. D. E. Lauchlan. (University Buildings, St. George's Square, Sheffield 1, at 7.0 p.m.)

18 February. Chemical Society, Edinburgh Section. "Recent Progress in the Study of Metallic Corrosion", by Dr. W. H. J. Vernon. Joint Meeting with the Royal Institute of Chemistry and the Society of Chemical Industry. (North British Station Hotel, Edinburgh, at 8.0 p.m.)

18 February. Institute of Welding, Slough Section. "Aluminium Welding for Shipbuilding", by P. T. Houldcroft. (The Community Centre, Farnham Road, Slough, Bucks., at 7.30 p.m.)

18 February. Institution of Mining and Metallurgy. General Meeting. (Rooms of the Geological Society, Burlington House, Piccadilly, London, W.1, at 5.0 p.m.)

18 February. Physical Society, Acoustics Group. "The Anomalous Behaviour of Chromium". Short papers by H. Pursey and R. W. Powell, A. H. Sully, and J. H. Rendall. (4 Grosvenor Gardens, London, S.W.1, at 5.15 p.m.)

18 February. Society of Chemical Industry, Corrosion Group. (Joint Meeting with the Road and Building Materials Group). "The Use of Non-Ferrous Metals in Domestic Water Supply", by H. S. Campbell. (Institution of Structural Engineers, 11 Upper Belgrave Street, London, S.W.1, at 6.0 p.m.)

23 February. Sheffield Metallurgical Association. "25 Years of Co-operative Research on Corrosion", by Dr. J. C. Hudson. (Joint Meeting with the Royal Institute of Chemistry.) (B.I.S.R.A., Hoyle Street, Sheffield, at 7.0 p.m.)

24 February. Institute of British Foundrymen, London Branch. "Propeller Manufacture", by J. M. Langham. (Waldorf Hotel, London, W.C.2, at 7.30 p.m.)

25 February. Institution of Production Engineers, Western Graduate Section. "Investment Casting Technique", by D. B. F. Tedds. (Wheatstone Hall, Gloucester, at 7.30 p.m.)

26 February. Chemical Society, Newcastle and Durham Section. "Adhesion and Surface Properties of Solids", by Dr. F. P. Bowden. (The Chemistry Building, King's College, Newcastle-on-Tyne, at 5.30 p.m.)

26 February. Institute of Metal Finishing, Sheffield and North-East Branch. "Stress in Electrodeposits", by R. A. F. Hammond. (Grand Hotel (Fitzwilliam Room), Sheffield, at 6.30 p.m.)

1 March. Institute of British Foundrymen, Sheffield and District Branch. "Methods Employed in the Production of Heavy Iron Castings", by J. Richardson and F. C. Lawson. (Sheffield College of Commerce and Technology, Department of Engineering, Pond Street, Sheffield 1, at 7.30 p.m.)

2 March. Institute of Metal Finishing, Midland Branch. "Symposium of Modern Chromium Plating", by A. W. Wallbank and C. Wharrad. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m.)

2 March. Sheffield Metallurgical Association. "Aspects of Optical and Electron Microscopy", by Dr. J. Nutting and G. C. Smith. (B.I.S.R.A., Hoyle Street, Sheffield, at 7.0 p.m.)

3 March. Institute of Metal Finishing, Scottish Branch. Practical Platers' Forum. (Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 7.0 p.m.)

3 March. Society of Chemical Industry, Stirlingshire and District Section. "Recent Information on Non-Ferrous Metals of Interest to the Chemical Engineer", by W. H. L. Hooper. (Lea Park Rooms, Callendar Road, Falkirk, at 7.30 p.m.)

4 March. East Midlands Metallurgical Society. "Experimental Welding of Metallurgical and Engineering Interest", by B. R. Byrne. (Nottingham and District Technical College, Shakespeare Street, Nottingham, at 7.30 p.m.)

4 March. Institute of Welding, North London Branch. "The Welding of Copper and Its Alloys", by R. L. Bernhardt. (Manson House, Portland Place, London, W.1, at 7.30 p.m.)

4 March. Institution of Production Engineers, Reading Branch. "The Shell-Moulding Process", by D. N. Buttrey. (Great Western Hotel, Reading, at 7.30 p.m.)

5 March. Society of Chemical Industry, Corrosion Group. "Protective Coatings for Ships and Marine Installations", by J. C. Hudson. "Cathodic Protection of Ships and Jetties", by K. A. Spencer. "Corrosion of Ships' Machinery", by L. Kenworthy. "Performance of Aluminium Alloys in Ships", by D. C. G. Lees. (Royal Technical College, George Street, Glasgow, C.1, 2.30 p.m. and 7.15 p.m.)

8 March. Institute of Welding, Sheffield and District Branch. "Technical Institutions, their Organization and Functions", by G. A. Parsloe. (Sheffield College of Commerce and Technology, Pond Street, Sheffield 1, at 7.15 p.m.)

9 March. Institute of Metal Finishing, Organic Finishing Group. "Epoxide Resins in Metal Finishing", by R. N. Wheeler. (Regent House, St. Phillip's Place, Colmore Row, Birmingham 3, at 6.30 p.m.)

Diary of Scientific Meetings, &c., of an International Character Likely to be of Interest to Members of the Institute in 1954

15–18 February. American Institute of Mining and Metallurgical Engineers, Annual Meeting (all branches of Mining, Metallurgy, and Petroleum), New York.

20–25 February. International Management Congress, Sao Paulo.

26–27 February. American Physical Society, General Meeting, Austin, Tex.

14–21 March. Vienna Spring Fair.

16–20 March. Electrical Engineers' Exhibition, London.

18–19 March. Chemical Engineering Group, Society of Chemical Engineering. Joint Conference with the Food Group on "Chemical Engineering in the Food Industry", London.

18–20 March. American Physical Society, General Meeting (Solid-State Physics and High-Polymer Physics), Detroit, Mich.

22–26 March. National Factory Equipment Exhibition, London.

23 March–1 April. American Chemical Society, Kansas City.

30 March–1 April. Physical Society, Spring Meeting, Dublin.

31 March–2 April. Chemical Society, Anniversary Meeting, Manchester. (31 March, Symposium on "Dynamic Stereochemistry").

3–9 April. Conference on The Young Worker: Education for Human Relations, Oxford.

5–7 April. American Institute of Mining and Metallurgical Engineers, Conferences on Open-Hearth Steel Making and Blast Furnaces, Coke Ovens, and Raw Materials, Chicago, Ill.

5–7 April. Institution of Chemical Engineers. Symposium on Gas Absorption, Birmingham.

6–9 April. Institute of Physics. Conference on The Physics of Particle-Size Analysis, Nottingham.

7–9 April. Faraday Society. General Discussion on "The Study of Fast Reactions", Birmingham.

8–13 April. Physical Society's Exhibition of Scientific Instruments, London.

20–24 April. Fourth International Conference on Electrodeposition and Metal Finishing, London.

22 April. British Non-Ferrous Metals Association. Annual General Meeting and Luncheon, London.

24 April–9 May. Liège International Fair.

25 April–4 May. Hanover Light and Heavy Industries Fair.

26–30 April. American Society of Tool Engineers, 10th Industrial Exposition, Philadelphia, Pa.

26 April–4 May. Institute of Metals and Société Française de Métallurgie. Joint Spring Meeting, London, with extension tours to Birmingham, Cambridge, Sheffield, and South Wales.

29 April. Institution of Civil Engineers, Annual Dinner, London.

29 April–1 May. American Physical Society, General Meeting, Washington, D.C.

April (last week). International Institution for Production Engineering Research, General Assembly, Aachen.

2–6 May. Electrochemical Society Meeting, Chicago.

3–14 May. British Industries Fair, Birmingham and London.

6–7 May. Institution of Chemical Engineers. Joint Conference with the Koninklijk Instituut van Ingenieurs, the Chemical Section of the Netherlands Chemical Society, and the Chemical Engineering Group, Society of Chemical Industry on "Unit Processes of Oxidation", in Holland.

12–14 May. Engineering Institute of Canada, Annual Meeting, Quebec.

16–23 May. International Institute of Welding, Annual Assembly (closed), Florence.

17–28 May. Gauge and Tool Exhibition, London.

19–26 May. International Railway Congress, London.

24 May–4 June. Conference of Engineering Institutions of the British Commonwealth, London.

26–27 May. Iron and Steel Institute Annual General Meeting, in London; annual dinner on 26 May.

29 May–1 June. Verein Deutsche Ingenieure, General Meeting, Mannheim.

31 May–1 June. Conference on Creep, at National Physical Laboratory, Teddington.

31 May–11 June. Canadian International Trade Fair, Toronto.

5–18 June. Iron and Steel Institute, Meeting in Sweden.

9–19 June. Mechanical Handling Exhibition, London.

13–18 June. American Society for Testing Materials, Annual Meeting, Chicago, Ill.

14–18 June. Annual Symposium on Molecular Structure and Spectroscopy, Ohio State University, Columbus.

14–19 June. International Scientific and Technical Congress (arranged by Vlaamse Ingenieursvereniging), Antwerp.

14–18 June. Colonial Engineering Conference, London.

20–25 June. American Institute of Chemical Engineers. International Meeting on "Chemical Engineering Aspects of Nuclear Processes", Ann Arbor, Mich.

21–23 June. Chemical Institute of Canada, Annual Conference, Toronto.

22–26 June. Institute of British Foundrymen Conference, Glasgow.

23–25 June. Groupement pour l'Avancement des Méthodes Spectrographiques des Produits Metallurgiques, 17th Congress for Advancement of Spectrographic Methods, Paris.

24 June. Institution of Civil Engineers, Conversazione, London.

28–29 June. American Physical Society, General Meeting (Electron Physics), Minneapolis.

June. Institution of Chemical Engineers. Conference on "The Content of the Chemical Engineering Syllabus" (location undecided).

June or July. Joint Commission on Spectroscopy of the International Council of Scientific Unions, Lund, Sweden.

6–9 July. International Conference on Electron Microscopy, Joint Commission on Electron Microscopy of the International Council of Scientific Unions, London.

7–10 July. American Physical Society, General Meeting, Seattle, Wash.

8–9 July. International Union of Pure and Applied Physics, 8th General Assembly, London.

12–15 July. American Electroplaters' Society, New York.

13–16 July. Conference on the Physics of the Solid State, with Special Reference to Defects in Solids, University of Bristol, with co-operation of the International Union of Pure and Applied Physics, at Bristol.

13–17 July. Conference on Experimental and Nuclear Physics, University of Glasgow with the co-operation of the International Union of Pure and Applied Physics, at Glasgow.

July (last two weeks). Association Française pour l'Avancement des Sciences, Poitiers.

16–21 July. International Commission for Electron Microscopy, London.

19–20 July. Conference on Mechanical Effects of Dislocations in Crystals, Department of Metallurgy, University of Birmingham.

19–24 July. Radioscope Conference, Oxford.

21–28 July. International Union of Crystallography, Paris.

25 July–8 August. World Power Conference. Sectional Meeting. Planning of electric power industry; electric power industry in tropical and sub-tropical regions; natural and derived fuels; wind power; solar energy; uses of electric power; and international hydroelectric developments, Rio de Janeiro.

August. Symposium on Photoelasticity and Photoplasticity, International Union of Theoretical and Applied Mechanics, Brussels.

15–18 August. Pan-Indian Ocean Science Congress, Pan-Indian Ocean Science Association, Perth, Western Australia.

23–28 August. Annual World Congress on the Philosophy of Science, Zürich.

23 August–4 September. International Scientific Radio Union, Amsterdam or The Hague.

25 August–1 September. Symposium on Analytical Chemistry, Birmingham.

30 August–5 September. International Congress on Surface-Active Compounds, Paris.

30 August–6 September. Colloquium on Spectroscopy, Austria.

1–8 September. British Association for the Advancement of Science, Oxford.

2–18 September. Scottish Industries Exhibition, Glasgow.

6–9 September. Ionospheric Conference, in Cambridge, arranged in association with a meeting of the International Scientific Radio Union in Holland.

6–14 September. Institute of Metals. Autumn Meeting, Zürich and Montreux.

6–16 September. International Electrotechnical Commission, Jubilee Meeting, Philadelphia, Pa.

10–11 September. Chemical Institute of Canada, Western Regional Conference, Vancouver, B.C.

12–17 September. American Chemical Society, New York.

13–24 September. 1st International Instrument Congress and Exposition, Instrument Society of America, Philadelphia, Pa.

15 September (approx.). International Congress of Industrial Chemistry, Brussels.

15–17 September. Faraday Society General Discussion on "Coagulation and Flocculation", Sheffield.

16–19 September. Deutsche Gesellschaft für Metallkunde. Annual Meeting, Bad Pyrmont.

19–26 September. International Foundry Congress, Florence.

23–24 September. American Institute of Mining and Metallurgical Engineers, Conference on Minerals Beneficiation, San Francisco, Calif.

24–27 September. ASLIB Annual Conference, London.

27 September–2 October. International Conference on Engineering Education, International Committee on Engineering Education of Conference of Engineering Societies of Europe and U.S. (EUSEC), in Europe.

28 September–1 October. Association of Iron and Steel Engineers, Cleveland, Ohio.

Autumn. Iron and Steel Institute, Symposium on Powder Metallurgy, London.

5–9 October. American Institute of Mining and Metallurgical Engineers, Conference on Industrial Minerals, Lake Placid, Mich.

13 October. Institute of Metal Finishing, Annual Autumn Meeting, London.

15 October. International Bureau of Weights and Measures, General Conference, Paris.

24–25 November. Iron and Steel Institute, General Meeting, London.

25–30 October. Société Française de Métallurgie, Autumn Meeting, Paris.

28–29 October. American Institute of Mining and Metallurgical Engineers, Fuels Conference, Pittsburgh, Pa.

1–3 November. American Institute of Mining and Metallurgical Engineers, Institute of Metals Division, Chicago, Ill.

1–5 November. American Society for Metals, National Metal Congress and National Metal Exposition, Chicago, Ill.

1–4 December. American Institute of Mining and Metallurgical Engineers, Electric-Furnace Steel Conference, Pittsburgh, Pa.

End of Year. Instituto del Hierro y del Acero. General Assembly, Madrid.

[*For Appointments Vacant, see p.* a, *facing last page of "Metallurgical Abstracts."*]